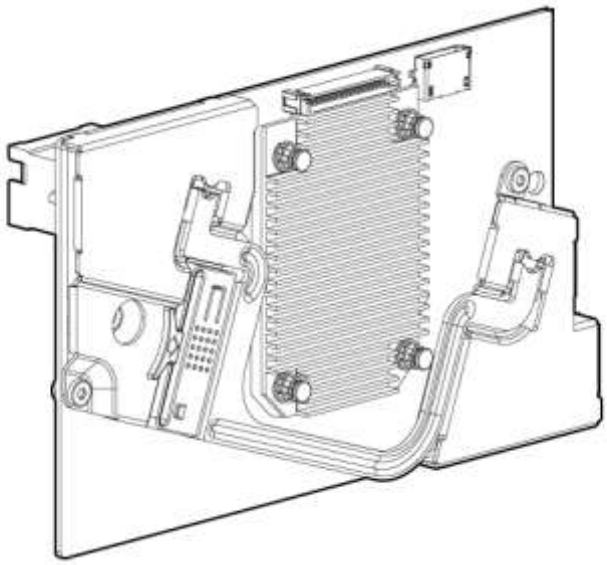
Overview

HP Smart Array P244br Controller

The HP Smart Array P244br Controller is a Flexible Smart Array, 12Gb/s SAS RAID controller that provides enterprise-class storage performance and data protection for the HP ProLiant BL460c Gen9 Server Blade. It features two internal physical links and delivers increased server uptime by providing advanced storage functionality with flash-backed write cache (FBWC). The Smart Array P244br Controller delivers increased server uptime by providing advanced storage functionality; including 1GB flash back write cache, pre-failure warning, and optional Secure Encryption. Data compatibility between HP Smart Array Controllers means customers can easily upgrade to future Smart Array Controllers.

The Gen9 Server family of controllers supports the HP Smart Storage Battery. With HP Smart Storage Battery, multiple Smart Array controllers are supported without needing additional backup power sources for each controller, resulting in a simple upgrade process and at a reduced cost.



What's New

- HP Smart Array P244br for BL460 Gen9

Models

HP Smart Array P244br Controller	HP Smart Array P244br/1GB FBWC 12Gb 2-ports Int SAS Controller	749680-B21

Standard Features

The Smart Array Advantage

HP's innovative design and integration work of the Smart Array family of products creates customer value that is unmatched in the industry. Use of Smart Array products across multiple applications results in a much lower Total Cost of Ownership (TCO) than any other server storage RAID product. The HP Smart Array family brings an unparalleled return on investment through:

Data Compatibility among most current shipping Smart Array controllers allows simple and easy upgrades any time needs for higher performance, capacity, and availability increase. Even successive generations of Smart Array controllers understand the data format of other Smart Array Controllers.

Consistent Configuration and Management Tools. Most current shipping Smart Array products utilize a standard set of management and utility software. These tools minimize Total Cost of Ownership (TCO) by reducing training requirements and technical expertise necessary to install and maintain the HP server storage.

SmartDrive Carrier is for use across multiple HP servers, Universal Hard Drive form factor is for disk enclosures and storage systems. With compatibility across many enterprise platforms, you are free to deploy and re-deploy these drives to quickly deliver increased storage capacity, migrate data between systems, and easily manage spare drives.

Pre-Failure Warranty means HP Insight Manager not only reports when a drive is going to fail but allows replacement of failing drives prior to actual failure. For complete details, consult the HP Support Center or refer to your HP Server documentation.

Key Features

- Seamless upgrades from past generations to next generation HP high performance and high capacity Serial Attached SCSI Smart Array controllers.
- The SA-P244br Controller supports internal drives of the ProLiant BL460 Gen9 server.
- 12Gb/s SAS technology delivers high performance and data bandwidth and contains full compatibility with 6Gb/s SATA technology.
- x8 PCIe 3.0 host interface technology delivers high performance and data bandwidth
- Standard 1GB flash backed cache enables array expansion, logical drive extension, RAID migration, and stripe size migration.
- Standard features on the SA-P244br are Capacity Expansion, mirror split, recombine, and rollback in Online Mode, Drive Erase, Performance Optimization-Degraded Reads and Read Coalescing, Move/Delete any individual LUNS and Online Split Mirror.
- The HP SSD Smart Path feature included in the Smart Array software stack improves SSD read for all RAID levels and RAID 0 write operations by optimizing the path to each SSD attached to the controller.
- Mix-and-match SAS and SATA hard drives, lets you deploy drive technology as needed to fit your computing environment. HBA Mode. -
- Software consistency on most current shipping Smart Array products: HP Smart Storage Administrator (HP SSA), HP Systems Insight Manager, and Intelligent Provisioning.
- The SA-P244br controller supports up to 2 drives in ProLiant BL460 Gen9 server.
- Power Efficiency
- Secure Encryption
- SSD Smart Path
- Smart Cache

Online Management Features

- Online Capacity Expansion (with FBWC)
- Advanced Capacity Expansion (with FBWC)
- Online RAID Level Migration (with FBWC)
- Online Stripe Size Migration (with FBWC)
- Online Mirror split, recombine, and rollback
- Unlimited Global Online Spares Assignment
- User Selectable Expand and Rebuild Priority
- User Selectable RAID Level and Stripe Size
- User Selectable Read and Write Cache Sizes

Standard Features

	• Supports Predictive Spare Activation
Ports	• SAS physical links distributed across 2 x1 internal port connectors.
Performance	HP's High Performance Architecture sets new boundaries of industry performance expectations! • 12Gb/s SAS • 1 GB DDR3 MHz 40bit Flash-Backed Write Cache provides up to 4.2GB/s maximum bandwidth. • X4 8.5G PCI Express host interface provides 4GB/s maximum bandwidth. • MIPS 32-bit Processor • Read ahead caching • Flash Backed Write-back Cache
Native Command Queuing	Native Command Queuing (NCQ) is a technology designed to increase performance of SATA hard disk drives by allowing the individual hard disk to internally optimize the order in which received read and write commands are executed. This can reduce the amount of unnecessary going back-and-forth on the drive's heads, resulting in increased performance for workloads where multiple simultaneous read/write requests are outstanding, most often occurring in server or storage-type applications. Without NCQ the drive has to process and complete one command at a time. For NCQ to be enabled, it must be supported and turned on in the controller and in the hard drive itself.
Capacity	Given the increasing need for high performance and rapid capacity expansion, the SA-P244br offers: • Up to 2.4TB of internal storage with 2x internal 1.2TB 2.5" SAS/SATA SFF hard drives.
Availability	Provides increased server uptime by providing advanced storage functionality: • Online Capacity Expansion (with FBWC) • Online RAID Level Migration (with FBWC) • Online Stripe Size Migration (with FBWC) • Pre-Failure Warranty
Fault Prevention	The following features offer detection of possible failures before they occur, allowing preventive action to be taken: • S.M.A.R.T.: Self Monitoring Analysis and Reporting Technology first developed at HP detects possible hard disk failure before it occurs, allowing replacement of the component before failure occurs. • Drive Parameter Tracking monitors drive operational parameters, predicting failure and notifying the administrator. • Dynamic Sector Repairing continually performs background surface scans on the hard disk drives during inactive periods and automatically remaps bad sectors, ensuring data integrity. • Smart Array Cache Tracking monitors integrity of controller cache, allowing pre-failure preventative maintenance.
Fault Tolerance	Keeps data available and server running while a failed drive is being replaced; several fault tolerance configurations are supported including: **RAID 1 & 10** (Drive Mirroring): Supported with a minimum of 2 drives. This allocates half of the drive array to the data and the other half to the mirrored data, providing two copies of the data.

Standard Features

Fault Recovery

Minimizes downtime, reconstructs data, and facilitates a quick recovery from drive failure

- DRAM ECC corrects against single bit data and address corruption.
- Flash Backed Write Cache upgrade provides indefinite data retention.

Ease of Use

Consistency and upgradeability on most current shipping Smart Array products make them unique in the industry:

- GUI based configuration, management and diagnostic software tools with the HP Smart Storage Administrator
- Common data format between generations of products
- Data migration between servers and external Modular Smart Array enclosures and HP Disk Enclosures

HP SSD SmartPath

The HP SSD Smart Path feature included in the Smart Array software stack improves Solid State Disk (SSD) read performance. The Smart Array driver chooses the optimum path to access each SSD. With up to 4x better SSD read performance, HP SSD Smart path chooses the optimum path to the SSD and accelerates reads for all RAID levels and RAID 0 writes. HP SSD Smart Path Requires updated firmware, drivers, and configurable utility available here: www.hp.com/go/HPSSDSmartPath. HP SSD Smart Path is ideal for read intensive workloads and is included as a base feature on HP Smart Array P-series controllers. The following operating systems are supported by the HP SSD Smart Path feature

- Microsoft Windows Server 2008
- Microsoft Windows Server 2008 R2
- Microsoft Windows Server 2012
- VMWare
- Red Hat
- SUSE

Warranty

The warranty for this device is 3 years parts only.

Pre-Failure Warranty: Drives attached to the Smart Array Controller and monitored under Insight Manager are supported by a Pre-Failure (replacement) Warranty. For complete details, consult the HP Support Center or refer to your HP Server Documentation.

Warranty Upgrade Options

- Response - Upgrade on-site response from next business day to same day 4 hours
- Coverage - Extend hours of coverage from 9 hours x 5 days to 24 hours x 7 days
- Duration - Select duration of coverage for a period of 1, 3, or 5 years
- Warranty upgrade options can come in the form of Care Packs, which are sold at the HP System level this product attaches too

Compatibility

Server Support

For up to date compatibility, please see the following URL for complete Smart Array P244br Controller compatibility and support information:
http://h18006.www1.hp.com/products/servers/proliantstorage/arraycontrollers/index.html

Operating Systems

Microsoft Windows Server 2012 R2
Microsoft Windows Server 2012
Microsoft Windows Server 2008 R2
Microsoft Windows Server Hyper-V, 2012
Microsoft Windows Server Hyper-V, 2008
Red Hat Enterprise Linux 7
Red Hat Enterprise Linux 6 U5
SUSE Linux Enterprise Server 11 SP3
SUSE Linux Enterprise Server 12 (Support pending)
VMware
Canonical Ubuntu 14.04*
Canonical Ubuntu 12.04*
Solaris 11.1*

NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and the latest listing of software drivers available for your server and Smart Array RAID controller, please visit our Support Matrix at: http://www.hp.com/go/ossupport
NOTE: For more Linux OS support and certification information, please visit: http://h18004.www1.hp.com/products/servers/linux/

Software Suite

Most current shipping Smart Array products share a common set of configuration, management and diagnostic tools, including HP Smart Storage Administrator, and HP Systems Insight Manager. This software consistency of tools reduces the cost of training for each successive generation of product and takes much of the guesswork out of troubleshooting field problems. These tools lower the total cost of ownership by reducing training and technical expertise necessary to install and maintain HP server storage.

HP Systems Insight Manager

- Powerful server and server options/storage manager tool
- Monitors over 1200 system wide parameters
- Configuration/Diagnostic Utilities

HP Smart Storage Administrator (HP SSA)

- Comprehensive management for HP Smart Storage products
- Simplified and intuitive interface and functionality
- Advanced scripting and diagnostic features
- For more information please visit: www.hp.com/go/hpssa

Service and Support

Service and Support

HP Technology Services
Capitalizing on HP ProLiant server and HP BladeSystem capabilities requires a service partner who understands your increasingly complex business technology environment. That's why it makes sense to team up with the people who know HP infrastructure hardware and software best - the experienced professionals at HP Services.

Protect your business beyond warranty with HP Care Pack Services
When you buy HP Options, it's also a good time to think about what level of service you may need. HP Care Pack services provide total care and support expertise with committed response choices designed to meet your IT and business need.

HP Foundation Care services offer scalable reactive support-packages for HP servers and software. You can choose the type and level of service that is most suitable for your IT and business needs. HP Proactive Care delivers high levels of system availability through proactive service management and advanced technical response.

Recommended HP Care Pack Services for your HP product

Optimized Care

3-Year HP 6 hour Call to Repair Response, Proactive Care
Combined reactive and proactive support for hardware and software helping optimize your systems and delivering high levels of availability through proactive service management and advanced technical response. Hardware problem resolution to return the hardware in operating condition within 6 hours of the initial service request. A Technical Account Manager, as your single point of contact, will own your call or issue end to end until resolved.
http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855EEE.pdf

HP Installation of ProLiant Add On Options Service
This easy-to-buy, easy-to-use HP Care Pack service helps ensure that your new HP hardware or software is installed smoothly, efficiently, and with minimal disruption of your IT and business operations.

Standard Care

3-Year HP 24x7 4 hour response, Proactive Care Service
This service gives you combined reactive and proactive support including rapid access to our Advanced Solution Center to manage and prevent problems and a Technical Support Specialist with a broad level of technical knowledge that will engage with additional technical expertise as needed from HP's vast global resources.

HP Installation of ProLiant Add On Options Service
This easy-to-buy, easy-to-use HP Care Pack service helps ensure that your new HP hardware or software is installed smoothly, efficiently, and with minimal disruption of your IT and business operations.

Related Services

3 HP Proactive Care Personalized Support - Environmental Option
The Personalized Support option provides an assigned Account Support Manager who can bring best practices from across the industry plus extra technical skills to your IT team. This option is only available as an add-on to HP Proactive Care Support.

HP Proactive Select Service
Provides a flexible way to purchase HP best-in-class consultancy and technical services. You can buy Proactive Select Service Credits when you purchase your hardware and then use the credits over the next 12 months. http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENN.pdf

NOTE: Additional HP Care Pack services can be found at: http://hp.com/go/cpc

Service and Support

Insight Online/Insight Remote Support	HP Insight Remote Support provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. This comes at no additional cost with your HP solution. Learn more about Insight Remote Support http://www.hp.com/go/insightremotesupport and Insight Online http://h18013.www1.hp.com/products/servers/management/insight-online/index.html.
HP Support Center	Personalized online support portal with access to information, tools and experts to support HP business products. Submit support cases online, chat with HP experts, access support resources or collaborate with peers. Learn more http://www.hp.com/go/hpsc HP's Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime. HP Insight Remote Support and HP Support Center are available at no additional cost with a HP warranty, HP Care Pack or HP contractual support agreement. **NOTE:** *HP's Support Center Mobile App is subject to local availability
Parts and materials	HP will provide HP-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements. Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product QuickSpecs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services. The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction.
For more information	To learn more on services for HP ProLiant Servers, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: http://www.hp.com/services/proliant

Related Options

NOTE: This is a list of supported options. Some may be discontinued.

HP Hard Drives	**HP SAS Hot Plug SmartDrive Carriers for Gen8 Servers only**	
	SAS Hot Plug with SmartDrive SFF (2.5-inch) Enterprise Drives	
	HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	697574-B21
	HP 900GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652589-B21
	HP 600GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652583-B21
	HP 450GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652572-B21
	HP 300GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652564-B21
	HP 300GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652611-B21
	HP 146GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652605-B21
	SAS Hot Plug SmartDrive SFF (2.5-inch) Midline Drives	
	HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652749-B21
	HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652745-B21
	HP SAS Hot Plug Drives **NOTE:** Most of these drives are not supported by Gen8 servers.	
	HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive **NOTE:** This drive does support the Gen8 servers.	693648-B21
	HP 900GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive **NOTE:** This drive does support the Gen8 servers.	619291-B21
	HP 600GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive **NOTE:** This drive does support the Gen8 servers.	581286-B21
	HP 450GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive **NOTE:** This drive does support the Gen8 servers.	581284-B21
	HP 300GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507127-B21
	HP 300GB 6G SAS 15K rpm SFF (2.5-inch) Hot Plug Enterprise 3yr Warranty Hard Drive	627117-B21
	HP 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512547-B21
	SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
	HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive	605835-B21
	HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507610-B21
	HP SATA Hard Drives for Gen8 Servers only	
	6G SATA Hot Plug with SmartDrive SFF (2.5-inch) Midline (MDL) Drives	
	HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655710-B21
	HP 500GB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655708-B21
	HP SATA Hot Plug Hard Drives	
	SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
	HP 1TB 3G SATA 7.2K rpm SFF (2.5-inch) Hot Plug Midline 1yr Warranty Hard Drive	625609-B21
	HP 500GB 3G SATA 7.2K rpm SFF (2.5-inch) Midline 1yr Warranty Hard Drive	507750-B21
	HP Solid State Drive **NOTE:** These drives are only supported by Gen8 servers.	

Related Options

6G SATA ME Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives	
HP 800GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691868-B21
HP 400GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691866-B21
HP 200GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691864-B21
HP 100GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691862-B21
6G SATA ME Hot Plug SFF (3.5-inch) Enterprise Mainstream Solid State Drives	
HP 800GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691860-B21
HP 400GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691856-B21
HP 200GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691854-B21
HP 100GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691852-B21
6G SAS ME Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives	
HP 800GB 6G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	690829-B21
HP 400GB 6G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	690827-B21
HP 200GB 6G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	690825-B21
6G SAS SLC Hot Plug SFF (2.5-inch) Enterprise Performance Solid State Drives	
HP 400GB 6G SAS SLC SFF (2.5-inch) SC Enterprise Performance 3yr Warranty Solid State Drive	653082-B21
HP 200GB 6G SAS SLC SFF (2.5-inch) SC Enterprise Performance 3yr Warranty Solid State Drive	653078-B21
3G SATA MLC Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives	
HP 400GB 3G SATA MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653120-B21
HP 200GB 3G SATA MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653118-B21
HP 100GB 3G SATA MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653112-B21
HP Solid State Drive **NOTE:** These drives are not supported by Gen8 servers.	
6G SAS ME Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives	
HP 800GB 6G SAS Mainstream Endurance SFF 2.5-in Enterprise Mainstream 3yr Warranty Solid State Drive	690823-B21
HP 400GB 6G SAS Mainstream Endurance SFF 2.5-in ENT Mainstream 3yr Warranty Solid State Drive	690821-B21
HP 200GB 6G SAS Mainstream Endurance SFF 2.5-in Enterprise Mainstream 3yr Warranty Solid State Drive	690819-B21
6G SAS MLC Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives	
HP 800GB 6G SAS MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653109-B21

Related Options

HP 400GB 6G SAS MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653105-B21
HP 200GB 6G SAS MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	658478-B21
3G SATA MLC Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives	
HP 400GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	636597-B21
HP 200GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	636595-B21
HP 100GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	636593-B21
3G SATA MLC Non-hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives	
HP 400GB 3G SATA MLC SFF (2.5-inch) Non-hot plug Enterprise Mainstream 3yr Wty Solid State Drive	636605-B21
HP 200GB 3G SATA MLC SFF (2.5-inch) Non-hot plug Enterprise Mainstream 3yr Wty Solid State Drive	636601-B21
HP 100GB 3G SATA MLC SFF (2.5-inch) Non-hot plug Enterprise Mainstream 3yr Wty Solid State Drive	636599-B21
3G SATA MLC Quick Release SFF (2.5-inch) Enterprise Mainstream Solid State Drives	
HP 400GB 3G SATA MLC SFF (2.5-inch) Quick-release Enterprise Mainstream 3yr Wty Solid State Drive	636625-B21
HP 200GB 3G SATA MLC SFF (2.5-inch) Quick-release Enterprise Mainstream 3yr Wty Solid State Drive	636623-B21
HP 100GB 3G SATA MLC SFF (2.5-inch) Quick-release Enterprise Mainstream 3yr Wty Solid State Drive	636621-B21
3G SATA MLC Hot Plug LFF (3.-5inch) Enterprise Mainstream Solid State Drives	
HP 400GB 3G SATA MLC LFF (3.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	636611-B21
HP 200GB 3G SATA MLC LFF (3.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	636609-B21
HP 100GB 3G SATA MLC LFF (3.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	636607-B21
6G SAS SLC Hot Plug Enterprise Performance Solid State Drives	
HP 400GB 6G SAS SLC SFF (2.5-inch) Enterprise Performance 3yr Warranty Solid State Drive	632494-B21
HP 200GB 6G SAS SLC SFF (2.5-inch) Enterprise Performance 3yr Warranty Solid State Drive	632492-B21
6G SAS MLC Hot Plug Enterprise Performance Solid State Drives	
HP 800GB 6G SAS MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	632506-B21
HP 400GB 6G SAS MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	632504-B21
HP 200GB 6G SAS MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	632502-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/14038_div/14038_div.html

Related Options

(Worldwide)

NOTE: Go to the HP Hard Drive Compatibility table for complete drive compatibility information (http://www.hp.com/products/harddiskdrives). Using hard drives in unsupported configurations will result in voiding the warranty and could result in damage to the drive and/or loss of data.

NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

Technical Specifications

Dimensions	Flexible Smart Array (Daughter card PCIe) Form Factor 5.3 x 3.6 x 1.2 in (13.46 x 9.04 x 3.12 cm)
Disk Drive Support - Transfer rate	12Gb/s SAS (Serial Attached SCSI) 6Gb/s SATA (Serial ATA)
SAS Connectors	2 internal port connectors
Cache Memory Speed	DDR3- MHz with 72-bit wide bus provides up to 4.2GB/s maximum bandwidth.
Server Interface	x8 5G PCIe 3.0 provides 8GB/s maximum bandwidth.
SAS Speed	x8 12G SAS provides 9.6GB/s maximum bandwidth.
Cache Memory	72-bit 1GB ECC protected cache
Logical Drives Supported	Up to 64 logical volumes
Maximum Volume Capacity	2.4TB (2 x 1.2TB SAS/SATA 2.5" MDL HDD) internal
Memory Addressing	64-bit, supporting servers memory space greater than 4 GB
RAID Support	RAID 1, 10 (Drive Mirroring) RAID 0 (Striping)
Upgradeable Firmware	Upgradeable Firmware with Recovery ROM feature

Environment-friendly Products and Approach	**End-of-life Management and Recycling**	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.